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ABSTRACT

The integration of Information Science into the library school at the University of Western Ontario was the theme of a talk delivered to ASIS in October 1976 and AALS in January 1977. Two problems arise in the pursuit of integration: (1) information exists in both book form and in some other form; e.g., machine readable form, and (2) theory and practice, i.e., information scientists tend toward theory while librarians tend toward practice. A combination of both is needed and is being undertaken at the University of Western Ontario by seminars conducted by team teachers from both disciplines and by the teaching of traditional courses such as cataloging, and classification and indexing as seminars. The school's program involves one year which is successful in the integration of theory and practice because it is geared towards the teaching of principles. (AP)

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The Integration of Information Science into the Library School Curriculum at the University of Western Ontario

Elaine Svenonius

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The Integration of Information Science into the Library School Curriculum at the University of Western Ontario

(Notes for a talk delivered at ASIS, October 1976 and AALS, January 1977)

Information science education can be said to have had its beginning at a Conference held at the Georgia Institute of Technology in Atlanta in April of 1962. The conference was convened to discuss how to meet the national need for persons who had both the skills of a librarian and the subject knowledge of a scientist. For the purpose of organizing my talk, I will begin with the definition of "information scientist" which emerged from this Atlanta conference: an information scientist is one "who engages in the theory and practice of information handling". The handling of information, in particular the organizing of it, is the truly distinguishing characteristic of an information professional. There is some danger of diffusing the concept of information professional in our propaganda and even in our teaching. We must not lose sight of this single distinguishing characteristic of the information professional, viz. his ability to organize information.

The information which the information professional organizes may be embodied in different forms. When embodied in books and these books are housed in a library, then the information professional is called a librarian. When information appears in some other embodiment, for instance on computer tape or disk, then the information professional is likely to be

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called an information scientist. This is a dichotomy: information in book form and information in some other form. I do not mean to restrict this other form to only machine-readable form. Included also must be information which is in dynamic form, for instance in the heads of resource persons: information business men use for decision making and information citizens use for coping in the community.

Handling information is basically a technology. But a technology can have a "scientific" foundation. I refer back to the above definition of an "information scientist". It says that he is one who is acquainted with the theory as well as the practice of information handling. The 1962 Atlanta conference was a landmark not only in that it marked the beginning of information-science education but also because it marked the beginning of a conscious search for theory, a search for an intellectual base for information handling activities. The second dichotomy I wish to raise is that between the theory and practice, in particular, between the theory and practice of information handling. Information scientists tend toward the former and librarians toward the latter.

Depending on one's point of view, change is either painful or exciting. It is convenient, both for those who want to hasten change and those who want to impede it, to express the process of change in terms of dichotomies. Integrating information science into a traditional library school curriculum

I see as the overcoming of the two dichotomies introduced above: that between information in book form and in other forms and that between the theory and practice of information handling. That these dichotomies will eventually be overcome I think is inevitable. "The moving finger writes . . ." There is a determinism in the development of a discipline which individuals, or institutions, such as library schools, can do little to alter. What library schools can do, however, is to attempt to read that future in which library and information science are integrated and to try and set a fairly straight course in that direction.

I will discuss the above dichotomies one by one, beginning with the second, the dichotomy between theory and practice. The desire for a theory to underlie information handling activities has characterized North American librarianship since the early twenties when Williamson published his famous report. It is of course to be expected that librarianship would be touched by the twentieth century's desire for certain and "scientific" knowledge. It was at the Atlanta conference that this desire for intellectual foundations seemed suddenly actualized. It was Bob Hayes who opened Pandora's Box when he said that his concern was not with the information scientist but rather with the science of information. He added, and this was a pregnant point, that the science of information was multidisciplinary, incorporating linguistics, mathematics, computer science and philosophy. An appeal for theory?

It is unfortunate that the search for theory that was given stimulus in 1962 was characterized by some charlatanry and unclear vision. Bar Hillel's attempts to stop the charlatans is well-known. His famous "Counsel of Despair" was a plea for honest workmen to come into the field and for the dishonest ones to leave. A statement Rees made at a symposium for education for information science at Western Reserve in 1965 seems emblematic of unclear visions. He pointed out that the teaching of information science, in the absence of an agreed upon definition of information science, was a highly individualistic activity. Information science was being taught by "stars" in the field who had achieved eminence and acclaim for inventiveness and ingenuity in systems design. They put on "one-semester stands" which were little integrated with the rest of the curriculum.

I hope this is not true now! I think we can see more clearly now with the 60's and half the present decade gone. A scientific foundation is not got by wishing: nor can an instant theory be got by looking around and capitalizing, by analogy, on likely theories in other disciplines. This is not to say that contributions from other disciplines cannot be extremely important, but rather to emphasize that if information technology is to have a scientific foundation it must originate in research within the discipline itself and, it might be added, by those who are committed to the discipline. The building of a scientific foundation will come about only slowly, and by

painstaking research. Research is the key. Introducing information science into the traditional library school curriculum to a certain extent can be equated with introducing research.

During the sixties most library schools did introduce a course on Research Methods into their curriculums. Some schools introduced more ambitious research efforts in the form of Ph. D. programs. I will talk now briefly about the research program at the School of Library and Information Science at the University of Western Ontario. At the Ph. D. level Western's research has a particular focus. This is bibliographical control. The word "bibliographical" is possibly misleading since what is investigated is the control of information (communicable knowledge) in any form. How information is organized, under what constraints and for what purpose are the variables which are studied under the rubric "bibliographical control". A special emphasis at Western has been on the study of index languages. We have resident at the School Jason Farradane who continues to develop aspects of relational indexing. Also at the School are Ganesh Bhattacharyya and Ravichandra Rao from the Documentation Research and Training Centre in Bangalore. They are specialists in a generalized subject index language called POPSI. One of our faculty, Tim Craven, has developed a generative grammar to produce index strings. It is called NEPHIS, which stands for Nested Phrase Indexing System. Contributing also to studies in indexing we have on our faculty a statistician, a linguist and a philosopher. To

further nurture the development of the indexing area we have invited people well-known in this area, Neelameghan, Soergel and Austin, to spend extended periods of time at the School.

As to teaching research at the M. L. S. level, suffice it to say that one of our nine required courses is one on research methods. Presumably most research methods courses have as an objective to make students critical consumers of research results, and ours no less, I think, however, if good research is to be done in our discipline research methods courses must attempt more than this. Ours attempts to teach librarianship from a scientific point of view. Much has been written on the benefits of the study of science. Whitehead saw such study as stretching the mind, disciplining thought, strengthening the imagination and issuing a stimulus towards creativeness. Probably no one would dispute that the literature of librarianship has been characterized by some fairly slovenly thought -- with opinion and speculation, with disregard for arguing a position or providing supporting evidence for generalizations. This sort of thing certainly has not helped our professional image, but sadder, it has not contributed to the solution of problems that really exist. Over time the teaching of research methods in library schools will correct this situation. To a certain extent it already has.

I would like now to return to the first dichotomy, that between

information in book form and that embodied in other forms, in machine-readable form or in dynamic form. It continues to be true that most students entering library schools today are book oriented. Thus there is still the need to impress upon them the usefulness of an expanded vision. In a moment I will mention certain methods we have, but first I'd like to make a general observation. Our School emphasizes the teaching of principles and though at times this may seem head-in-the-clouds, standing on principles is standing on safe ground in times of rapid change. Principles tend to remain fixed, while what changes are fashions in techniques and practices. Basically, the principles of information organization are the same whether the information is organized in books or in machines or in a resource person's head. Calvin Mooers once remarked, somewhat bitterly (bitterly, because people were not understanding what he meant by "descriptors"), that a large part of our population is incapable of dealing with ideas apart from the words they are clothed in. A certain amount of abstraction is necessary when talking about principles and ideas as opposed to techniques and facts. Insistence on principles probably has made the integration of information science into our curriculum somewhat easier than in other more technique-based schools.

In answer to the practical question, how do we go about accomplishing integration, I would say a method we use which is very helpful is team

teaching. By this I mean collaborative teaching, where two or more professors share in the teaching of one course. In principle, at least, our School opposes a teaching methodology based on lectures and examinations. For the most part our classes are conducted as seminars and this facilitates team-teaching. Students prepare for seminars by studying and writing in response to questions set by faculty members. These questions are designed to elicit discussion at the level of principles and ideas. For instance, a seminar question for a cataloguing course might be: "Discuss changes in the use and form of authority files in the transition from card catalogs to machine-readable catalogs". In some team-taught courses it is possible for two faculty members, for instance a machine-oriented and a non-machine-oriented person, to be present at every seminar. The association can engender mutual respect and understanding of different points of view. While this arrangement is costly in manpower, over time it is likely to be cost-effective. When it is not possible, for cost or other reasons, for two faculty members to be physically present at all seminars, yet they can still team teach, each taking responsibility for different modules of the course. From the students' side the main objective is still achieved, that of being presented with complementary viewpoints on a common topic.

Team teaching is being emphasized even more at our School as a result of a recent reorganization of our three professional methodology courses. These courses once delimited by broad discipline (humanities,

social sciences, sciences) are now delimited by function: there is a course on cataloging, classification and indexing, one on reference and one on collection development. These functions have long been performed by librarians. The introduction of new technology accompanied by a burst of new vocabulary has led to innovation in techniques for carrying out these functions. The fundamental techniques underlying the old and new techniques are the same, however. We aim to make our seminars a meeting ground where exchange of viewpoint and vocabularies takes place and, more importantly, where students are forced to deal with "ideas apart from the words they are clothed in".

Much has been written on the value of hands-on-experience in library school curriculums. Such experience is especially valuable where technology is being introduced and there are fears to be assuaged. The School achieved a giant step forward in the direction of integrating information and library science by the establishment of its ABC laboratory. (ABC stands for Automated Bibliographical Control). Automated and traditional methods of bibliographical control are physically proximate at the School in that the ABC laboratory and the library are housed together and are administrative under one head. In the laboratory there are terminals where students not only learn programming (BASIC is the language taught) but also practise retrieving information from commercial data bases. Access is provided to the Lockheed and SDC data bases and to the N.Y. Times and

OCLC bases. Q/L, a Canadian data base, is there and several in-house data bases as well, such as our library's catalog and Dr. Cameron's Hand Printed Books file. Several courses use the ABC laboratory for their practicums. Research is carried out there also. Currently work is going forward using GOTHIC, a retrieval system developed at the School by Peter Gulutzan, to simulate the command languages and search techniques used in retrieving information from the commercial data bases.

A question at issue today is whether or not it is possible to integrate information science and library science in a program as short as one year. (I'd like first to observe that our program, though one year in length, is equivalent to three semesters in the States, that is fifteen three credit courses). My position is that it is possible to provide integration in a one-year program. I said, when I began, that I understood integration to be the overcoming of two dichotomies: that between information in book form and in other forms and that between the theory and practice of information handling. This can be done in one year provided the teaching is geared towards the teaching of principles. It takes a shorter time to learn principles, "to get the general idea" than it takes to learn specific techniques and procedures. One might generalize to say that the length of a teaching program will be determined by the level of generality at which the teaching is geared. One year is enough for an integrated library-information science program provided the one-year program is well-

structured to ensure, in addition to an appreciation of common principles underlying traditional and automated methods of information handling, a good grounding in research methodology and a good dose of hands-on-experience.